



IN THE UNITED STATES PATENT AND TRADEMARK  
OFFICE

In re Patent Application of: Confirmation No. 7862  
Akira Hatakeyama Group Art Unit: 1752  
Application No.: 10/825,627 Examiner: Amanda C. Walke  
Filed: April 16, 2004  
Title: LIGHT-SHIELDING LAYER FOR DISPLAY DEVICE

**DECLARATION PURSUANT TO 37 C.F.R. §1.132**

Honorable Commissioner of Patents and Trademarks  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Akira Hatakeyama, one of the inventors of the present invention, do declare and state as follows:

I graduated from the University of Tokyo, Graduate School of Science, Department of Correlative Study of Physics and Science with a Master's degree in Science in March 1980;

I joined Fuji Photo Film Co., Ltd. (currently Fuji Film Corporation) in April 1980 and have been working there ever since;

I was involved in the development of silver halide photographic photosensitive material from April 1980 to June 1998;

From June 1998 to present, I have been involved in the development of thermal transfer image recording materials including black matrix used for liquid crystal displays;

I am one of the inventors of the presently claimed invention; and

I am familiar with the office Action of July 7, 2006, and understand that the Examiner has rejected claims 1 to 19 under 35 U.S.C. § 102(b) or 103(a) as being unpatentable over US Patent Nos. 5,527,649 and 5,718,992

The following additional explanation is given in order to make the advantages of the subject matter of the claimed invention clearer.

**Experiment C:**

Light-shielding layer samples of Comparative Examples 5-1 to 5-4 were prepared in the same manner as Example 1-1 described in the specification of the present application, except that the amount of dipentaerythritol hexaacrylate added, the thickness of the light-shielding layer, and the optical density thereof were changed as shown in Table A below. The samples obtained were evaluated in the same manner as the evaluation of Example 1-1 described in the specification, and the results are shown in Table A.

As is clear from the results shown in Table A, the samples (Comparative Examples 5-1 and 5-2) having a thickness over 0.9  $\mu\text{m}$  exhibited inferior property with respect to the generation of air bubbles, and the samples (Comparative Examples 5-3 and 5-4) having an optical density of less than 3.3 exhibited inferior hue.

Accordingly, it is understood that the presently claimed invention (that requires a thickness of 0.9  $\mu\text{m}$  or less and an optical density of 3.3 or more) unexpectedly achieved superior hue and the suppression of the generation of air bubbles.

**Experiment D:**

Light-shielding layer samples 6-1 and 6-2 were prepared in the same manner as in Comparative Example 2-1 described in the specification of the present application, except that the thickness of the light-shielding layer was changed as shown in Table A below. As is clear from the results shown in Table A, it is understood that the light-shielding layer containing carbon black exhibited inferior hue when the thickness of the layer was set to 0.9  $\mu\text{m}$  or more.

It is also understood that the light-shielding layer containing carbon black could not achieve an optical density of 3.3 or more with a thickness of 0.9  $\mu\text{m}$  or less due to its low R value.

Table A

Sample No.	Black Pigment	Thickness of Photosensitive Layer ( $\mu\text{m}$ )	Optical Density	R Value	Air Bubbles (Number)	Hue
Comp. Ex. 5-1	Silver (the same as in Example 1-1)	1.0	3.6	56	20	A
Comp. Ex. 5-2	Silver (the same as in Example 1-1)	1.1	3.6	56	28	A
Comp. Ex. 5-3	Silver (the same as in Example 1-1)	0.8	3.0	55	10	B
Comp. Ex. 5-4	Silver (the same as in Example 1-1)	0.8	2.1	56	11	B
Comp. Ex. 6-1	Carbon black (the same as in Comp. Ex. 2-1)	1.0	2.0	6.9	19	C
Comp. Ex. 6-2	Carbon black (the same as in Comp. Ex. 2-1)	0.9	1.8	7.1	12	C

### Conclusions

The claimed invention showed unexpectedly greater improvements in both of the hue and the suppression of generation of bubbles.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

DATE: October 5, 2006

AKIRA HATAKEYAMA

*Akira Hatakeyama*